and topographic differences—may modify or destroy stratification. It was found in 1937 that instability of the water strata, due to mixing, began in the latter part of September at the upper river stations and slowly progressed downstream toward the deeper waters of the bay, where effective mixing did not begin until late October. The stratification of winter, which has not yet been studied seriously, seems to be notably different from that of the summer season.

It appears that oxygen stratification in the Chesapeake Bay differs markedly from that prevailing in the Western Basin of the North Atlantic. Seiwell's[1] extensive investigations have shown that in that ocean region, where salinity stratification is not well developed, there is an oxygen-poor layer at intermediate depths, characterizezd by oxygen contents less than 60 per cent. of total saturation. That layer lies between a surface layer and a bottom layer, both of which are relatively rich in oxygen. On the other hand, in the Chesapeake Bay the surface stratum, which has low salt content and high oxygen content, is underlaid, at least in summer, by a bottom layer of much higher salinity and exceedingly low oxygen concentration. Seiwell's results, together with those of other students of Atlantic and Pacific waters, have contributed much to our general knowledge of marine environments, and further study of the various factors that control bathymetric oxygen variations should lead to a better understanding of many fundamental problems in oceanography and its diverse applications in the fishery industries.

In the preparation of this paper, valuable advice and criticism have been received from Professor Burton E. Livingston, of the Johns Hopkins University, and from Professor R. V. Truitt, of the University of Maryland.

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THE EFFECT OF ARSENIC ON THE TOXICITY OF SELENIFEROUS GRAINS

DURING investigations on the "alkali disease" or selenium poisoning and investigations on the comparative toxicities of several elements including selenium, tellurium, arsenic, vanadium, nickel, tungsten and molybdenum it was observed that, at the concentrations used, selenium was the only one of the elements to cause severe liver pathology[1,2,3,4,5] in the rat.

More recent experiments on the combined toxicities of selenium in combination with the above mentioned elements have revealed that the feeding of arsenic along with seleniferous grains prevents the characteristic symptoms of selenium poisoning in rats. The addition of 5 ppm of arsenic as sodium arsenite to the drinking water has given full protection against liver damage caused by 15 ppm of selenium in the form of seleniferous wheat. Two and one half ppm of arsenic gave only partial protection. The animals receiving 5 ppm of arsenic in their drinking water and 15 ppm of selenium in their feed also appear to be free from the other characteristic symptoms of selenium poisoning. Experiments also indicate that arsenic is effective in preventing liver damage and the general toxic effects of inorganic selenium as well as organic selenium (selenium occurring naturally in grains).

The feeding of arsenic to livestock to prevent selenium poisoning is not recommended on the basis of these results but since arsenic is effective it is hoped that some other elements or compounds which are in themselves non-toxic will be effective. Experiments are underway, and certain compounds have given promising results. Experiments with larger animals are also underway. A more detailed report is in preparation.

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"ANOMIA" PECTEN LINNAEUS

LINNAEUS, in the tenth edition of "Systema Naturae," 1758, p. 702, describes a fossil shell, *Anomia pecten,* in these words: "A. testa semi-orbiculata depressa multistrata; valvula altera plana (List. Angl. 243., t. 9, f. 49). Testa inferne s. margine cardinis linea recta s. transversa." No locality was given, but a specimen is contained in his cabinet at the Linnaean Society, London.

Lister's figure, cited by Linnaeus, is of a specimen "ex fodinis carbonum Fossilium juxta Hallifax," and is quite recognizable as *Pterinopecten papyraceus* (J. Sowerby, 1822) known to occur in the Halifax Hard Marine Band in the Coal Measures. The above description could be held to apply to this shell. By a strict application of the rules of nomenclature J. Sowerby's specific name would appear to be invalidated by Linnaeus's previously described species.

On the other hand, there is no doubt that Linnaeus had before him Swedish Silurian brachiopod shells long known as *"Strophomena" pecten* (Linn.). Knowledge

[1] Papers in Physical Oceanography and Meteorology, Vol. III, No. 1, 1934, and Vol. V, No. 3, 1937, Cambridge, Mass.

[1] K. W. Franke and V. R. Potter, *Jour. Nutrition,* 10: 213–221, 1935.

[2] H. E. Munsell, G. M. DeVaney and M. H. Kennedy, U. S. D. A. *Tech. Bull.* 534, 1936.

[3] K. W. Franke and A. L. Moxon, *Jour. Pharm. and Expt'l. Ther.,* 61: 89–102, 1937.

[4] A. L. Moxon, S. Dak. Agric. Expt. Station *Bulletin* No. 311, 1937.

[5] Unpublished data—this laboratory.

of the typical form was spread by personal contact among Swedish paleontologists, and the first figured specimen of *"S" pecten* (Dalman, Kogl. vet. Akad. Handl. for 1827, p. 110, 1828) is probably conspecific with the specimen still preserved in the Linnaean cabinet.

This confusion seems to arise from a difference in method. Linnaeus presumably only intended to show the general appearance of his shell to other workers, not to establish a type specimen.

Since *Pterinopecten papyraceus* is a common shell, cited in European literature for over 100 years, strict interpretation of the rules would lead to confusion. Therefore I am applying to the International Committee for Zoological Nomenclature for a suspension of the rules in this case, so that the name *"S." pecten* (Linn.) can be retained for the Silurian brachiopod.

Other of the Linnaean species are similarly referred to figures which do not represent the species in its modern interpretation (*e.g.*, such a common fossil as *Atrypa reticularis*) and, if the rules are suspended in the present case, a precedent will have been set up for the retention of those Linnaean species at present doubtful.

If the rules are suspended and *"S." pecten* (Linn.) is retained, I propose to figure and describe the specimen of *"Anomia" pecten* in the Linnaean cabinet as the neotype.

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SOME PLEISTOCENE MAMMALS FROM WARREN COUNTY, VIRGINIA

MR. T. M. MUSSAEUS, president of the Limeton Lime Company at Limeton, about six miles south of Front Royal, Warren County, Virginia, informed us that in recent quarrying operations a fissure filled with red clay containing bones had been opened up. Unfortunately most of the material had been discarded before he learned of the find, but he secured a few teeth, which were brought to Washington and identified by Mr. Charles W. Gilmore. The animals represented were a lion (*Felix atrox*), a tapir (*Tapirus,* sp.) and a bear (*Euarctos,* sp.). In view of the very few notices of Pleistocene mammals from the caves of Virginia this occurrence seems worth recording.

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SOCIETIES AND MEETINGS

THE OHIO ACADEMY OF SCIENCE

THE forty-eighth annual meeting of the Ohio Academy of Science was held at the College of Wooster, Wooster, Ohio, on May 6 and 7 under the presidency of Charles G. Shatzer, of Wittenberg College, Springfield, Ohio, and was by common consent one of the very best meetings of the academy ever held. The setting for the meeting was practically perfect, the College of Wooster, ably assisted by the Ohio Agricultural Experiment Station, having made every possible effort to anticipate and provide for the requirements, comfort and pleasure of all visiting scientists. The local committee on arrangements under the fine leadership of Professor Karl Ver Steeg was unusually efficient in caring for the many details incident to such a meeting.

The business portion of the meeting consisted of two short sessions, at which the following items of general interest were transacted, *viz.:*

(1) The academy authorized the formation of a new section to be known as the Section of Mathematics.

(2) The academy authorized the appointment of a special committee to cooperate with the Ohio director of education in an intensive study of the needs and requirements of science teachers in the public schools.

(3) It was voted to meet with the University of Cincinnati next year.

(4) The academy went on record as favoring a council form of government and authorized the appointment of a committee to study the constitution and by-laws and to suggest such changes as might be necessary to put such a form into operation at the next annual meeting.

(5) Passed a resolution approving the stand taken by the Western Society of Naturalists last December in opposition to the so-called "State Humane Pound Law" of California, the purport of which is to curtail animal experimentation by students of biology and medicine.

(6) The following five members were advanced to fellows in the academy: Dr. Fred A. Carlson, Ohio State University; Dr. Raymond A. Dobbins, Ohio Northern University; Dr. Robert A. Hefner, Miami University; Dr. Walter C. McNelly, Miami University; and Dr. John J. Wolford, Miami University.

(7) Sixty-one new members were elected, giving the academy at this time a membership slightly over five hundred.

(8) In preparation for the fiftieth anniversary in 1940 of the academy's organization, chairmen for the following committees were elected: *Publicity,* Edward S. Thomas; *Program,* Clarence H. Kennedy; *Speakers,* Frank J. Wright; *Historical Statistics and Lists,* Samuel Renshaw.